



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,956	02/19/2002	Roberto Padovani	010536	9226
23596 7590 09/08/2010 QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121				
EXAMINER HO, DUC CHI				
ART UNIT 2465		PAPER NUMBER		
NOTIFICATION DATE 09/08/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com

Office Action Summary

Application No.

10/079,956

Applicant(s)

PADOVANI ET AL.

Examiner

DUC C. HO

Art Unit

2465

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-7, 10-22, 24-28, 30-43 and 46-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-4, 7, 10, 14-22, 24-28, 30-43, 46, and 50 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 11-13 and 47-49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-940)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim Objections

1. Claims 43, 46-49 are objected to because of the following informalities:
Regarding claim 43, Applicant is requested to amend "A computer-readable storage medium" to --- A non-transitory computer-readable storage medium ---. The same remark applies to claims 46-49.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3-4, 7, 42-43, 46 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafsson et al. (US 7,024,168), hereinafter referred to as Gustafsson, in view of Rich (US 5,940,452).

Regarding claim 1, Gustafsson discloses controlled antenna diversity. Fig. 3 discloses a case of diversity where both RF processors 330 & 332 are used, see col.3, lines 12-43. The mobile station-fig.4 decides when it wants to use diversity. This decision can be based on current radio performance, the type of services currently used and /or the remaining battery power, see col.4, lines 4-7. In other words, Gustafsson discloses the use of two RF processors (a plurality of receiver chains) for diversity, see fig. 3, and reducing to a single RF processor (reducing the number of selected receiver chain) for diversity, see fig.4.

a receiver (a receiver, fig.4, col. 4, lines 32-36), including a plurality of receiver chains (radio frequency processors 420 & 422-fig.4) adapted for processing in the receiver;

a control system (a base band processing 430-fig.4) for controlling receive diversity and power consumption of said receiver (the baseband processing 430-fig.4 decides when it wants to use diversity by basing on current radio performance and/or remaining battery power, see col.4, lines 4-7) by selecting a number of said plurality of receiver chains based on said determined channel condition (the base band processing 430 is capable to select only the second processor 422 for diversity, see steps 514, 515, and 516), wherein said control system is configured for reducing said number of

selected receiver chains (Gustafsson discloses the use of two RF processors for diversity, see fig. 3, and reducing to a single RF processor for diversity, see fig.4.)

Gustafsson, however, does not expressly teach a pilot channel in order to (1) determine a channel condition of the pilot channel, and (2) [reducing the number of selected receiver chains] when the determined channel condition is above a first channel condition threshold.

Rich discloses dual mode radio subscriber unit having a diversity receiver apparatus and method therefor. The ratio E_c/I_o of a pilot channel is determined by controller 108-fig.1 via lines 142 & 720, wherein a selection of diversity of receiver 704-fig.1 can be controlled at controller 108 responsive to the determining whether a first or second ratio of the E_c/I_o is above a predetermined threshold, see col. 20-line 52 to col.21-line 19, see col.22-line 56 to col.23-line 4 (corresponding to (1) and (2)).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to employ a mechanism for selection diversity as taught by Rich into the system of Gustafsson. The suggestion/motivation for doing so would have been to maintain battery power consumption of the receiver for longer performance by enabling whether a plurality of receiver chains, or a single receiver chain should be on.

Regarding claim 3, Gustafson discloses a selection diversity that uses both antennas and processors-fig.3 (receiver chains), when a channel condition determined by Rich-fig.7 is below a second predetermined threshold, see step 616-fig.6.

Regarding claim 4, please see the rejection of claims 1 and 3. Regarding a first case where Rich teaches that when a channel condition is above a first threshold, step 606-fig.6, a number of selected receiver chains will be reduced. Regarding a second case where a second threshold in step 616-fig.6 is taught in Rich, a number of selected receiver chains in Gustafsson will be increased-fig.3. Since the number of receiver chains in the first case is less than in the latter case for diversity, the threshold in the first case is considered stronger than that of the second case in respect to minimizing the power consumption of the receiver.

Regarding claim 7, this claim has similar limitations as claim 1. Therefore, it is rejected under Rich-Gustafsson for the same reasons set forth in the rejection of claim 1.

Regarding claim 42, this claim has similar limitations as claim 1. Therefore, it is rejected under Gustafsson-Rich for the same reason set forth in the rejection of claim 1.

Regarding claim 43, this claim has similar limitations as claim 1. Therefore, it is rejected under Gustafsson-Rich for the same reasons set forth in the rejection of claim 1.

Regarding claim 46, this claim has similar limitations as claims 1 and 10. Therefore, it is rejected under Gustafsson-Rich for the same reasons set forth in the rejection of claims 1 and 10.

Regarding claim 50, this claim has similar limitations as claim 1. Therefore, it is rejected under Gustafsson-Rich for the same reasons set forth in the rejection of claim 1.

5. Claims 14-19, 20-22, 24, 26-28, 30-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafsson, in view of Rich, and further in view of Willey (US 6,505,058).

Regarding claim 14, Gustafsson and Rich disclose all claimed limitations, except determining a first data bit of the QPCH received a mobile station in accordance with processing of one or more signals produced based on the determined receive diversity.

One skill in the art would recognize the advantage of awakening a mobile station when it's time for consuming power from a power source to demodulate a channel using a radio frequency receiver. Therefore, employing a single bit message of QPCH that based on a determined receive diversity in order to wake up a mobile station so that the battery life of the mobile station can be greatly enhanced would be an obvious reason.

Willey discloses a method for determining whether to wake up a mobile station. The mobile station receives a QPCH bit representing by "On" (corresponding to 1), "Off" (corresponding to zero), and "not certain" (corresponding to erasure). "On" also means the base station's clearly transmitted the bit. This further means that the mobile station should not in sleep mode, so that it could receive data from the base station, see col. 5, lines 56-67, and col.5-line 45 to col.6-line 7.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to employ a mechanism using a QPCH bit in controlling a battery life of a mobile station as taught by Willey into the combine system of Gustafsson and Rich. The suggestion/motivation for doing so would have been to provide a mobile station a

capability of using a single bit message of QPCH, transmitted from a base station to enhance its battery life.

Regarding claim 15, the system of Gustafsson-Rich-Willey enables a mobile station to stay in sleep mode when a determined first data bit is "Off", see Rich at col. 5, lines 56-67, and col.5-line 45 to col.6-line 7.

Regarding claim 16, the system of Gustafsson-Rich-Willey is able to indicate a mobile station when it is not in sleep mode as the determined first data bit is "On" or "not certain", see Rich at col. 5, lines 56-67, and col.5-line 45 to col.6-line 7.

Regarding claim 17, the system of Gustafsson-Rich-Willey is able to direct its resource to decode a receive information when the determined first data bit is "On" or "not certain" see Rich at col. 5, lines 56-67, and col.5-line 45 to col.6-line 7.

Regarding claim 18, the system of Gustafsson-Rich-Willey enables a mobile station to stay in sleep mode when the determined second data bit is "Off", see Rich at col. 5, lines 56-67, and col.5-line 45 to col.6-line 7.

Regarding claim 19, this claim has similar limitations as claim 14. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 14.

Regarding claim 20, this claim has similar limitations as claim 15. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 15.

Regarding claim 21, this claim has similar limitations as claims 17 and 18. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claims 17 and 18.

Regarding claim 22, this claim has similar limitations as claims 14 and 16. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claims 14 and 16.

Regarding claim 24, this claim has similar limitations as claim 15. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 15.

Regarding claim 25, this claim has similar limitations as claims 16 and 17. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claims 16 and 17.

Regarding claim 26, this claim has similar limitations as claims 16 and 18. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claims 16 and 18.

Regarding claim 27, this claim has similar limitations as claim 14. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 14.

Regarding claim 28, this claim has similar limitations as claim 15. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 15.

Regarding claim 30, this claim has similar limitations as claim 25. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 25. The mobile station of Gustafsson-Rich is able to direct the battery power supply to receive a receive channel in response to the result of either a one or an erasure of Willey's bit.

Regarding claim 31, this claim has similar limitations as claim 26. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 26. The mobile station of Gustafsson-Rich is able to direct the battery power supply to receive a receive channel in response to the result of either a one or an erasure of Willey's bit.

Regarding claim 32, this claim has similar limitations as claims 14-17. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claims 14-17. The mobile station of Gustafsson-Rich is able to direct the battery power supply to receive a receive channel in response to the result of either a one or an erasure of Willey's bit.

Regarding claim 33, Rich teaches the controller 108-fig. 1 is capable of directing the mobile resources, i.e., battery power supply, to receive a receive channel, after the determining receive diversity at the receiver, in accordance with a receive processing of the determined receive diversity.

Regarding claim 34, this claim has similar limitations as claim 32. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 32.

Regarding claim 35, this claim has similar limitations as claim 33. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 33.

Regarding claim 36, this claim has similar limitations as claim 32. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 32.

Regarding claim 37, this claim has similar limitations as claim 17. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 17.

Regarding claim 38, if the bit of Willey is an erasure based on a condition of the pilot channel received at the receiver of Rich, of which the channel condition is below the threshold, the controller 108-fig.1 of Rich is able to direct the battery power supply and the antennas to receive a receive channel.

Regarding claim 39, this claim has similar limitations as claim 36. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 36.

Regarding claim 40, this claim has similar limitations as claim 17. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 17.

Regarding claim 41, this claim has similar limitations as claim 38. Therefore, it is rejected under Gustafsson-Rich-Willey for the same reasons set forth in the rejection of claim 38.

Allowable Subject Matter

6. Claims 5-6, 11-13 are objected to as being independent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 47-49 are objected to as being independent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if the rejected base claim has overcome the objection set forth in this Office action.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 7, 14, 19, 22, 27, 32, 34, 36, 39, 42, 43 and 50 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Ho whose telephone number is (571) 272-3147. The examiner can normally be reached on Monday through Thursday from 7:30 am to 6:00 pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner

/DUC C HO/

Primary Examiner, Art Unit 2419

09-01-2010

